

NEW GENERA AND SPECIES OF
BOLIVIAN ELMIDAE (COLEOPTERA)

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ABSTRACT

A new genus *Holcelmis* with 2 new species, *H. woodruffi* and *H. mamore*, and a related new genus and species, *Epodelmis rosa*, are described from the lowlands of Bolivia.

INTRODUCTION

Both *Holcelmis* and *Epodelmis* are related to the genus *Hexacylloepus* Hinton, which they seem largely to replace in the lowlands of Bolivia and perhaps also of Peru and adjacent areas. All known specimens of *Holcelmis* and *Epodelmis* were taken at light. The plastron-bearing groups of the family Elmidae normally live in fast-flowing streams, and their claws are large and strong. Such streams are absent over much of the area occupied by *Holcelmis*, and the species of this genus may prove to be rather exceptional in living in slow-moving or even standing water. In this connection it is of interest to note that the claws of *Holcelmis* are more delicate than those of any other plastron-bearing elmid known to me.

The holotypes of *H. woodruffi* and *E. rosa* will be deposited in the Florida State Collection of Arthropods, Gainesville, Florida. The holotype of *H. mamore* remains in my collection.

Holcelmis Hinton, NEW GENUS

Body subparallel. Antennae (Fig. 2) 11-segmented. Maxillary palpi (Fig. 3) 4-segmented. Pronotum with a well-developed sublateral carina on each side on basal four-fifths; disk with a broad, median longitudinal depression and with a broad, more or less distinct, depression on each side on basal half; lateral margin of pronotum when seen from side not double; sides, especially near apical angles, broadly dilated (Fig. 1, A) and with area near lateral margin flexed upwards. Elytron with 2 well-developed, granulate, sublateral carinae, 1 on 6th interval and 1 on 8th interval; apices of elytra not produced. Prosternum long in front of anterior coxae; process between coxae short and narrow (Fig. 1, D); prosternum without distinct sublateral carinae. Abdomen without sublateral carinae on disk of first sternite (Fig. 1, D). Legs with a single cleaning fringe on front and hind tibiae and 2 cleaning fringes on middle tibiae; claws slender, not toothed. Plastron of narrow or broad scale-like hairs with serrated sides (Fig. 1, E) present on the following areas: head below and behind eyes; hypomera (Fig. 1, B); epipleura; sides of pro-, meso-, and metasternum; all of abdomen except disk of first sternite; trochanters, femora, and tibiae.

GENOTYPE: *Holcelmis woodruffi* Hinton, new species.

COMPARATIVE NOTES: The species of *Holcelmis* have a close superficial resemblance to those of *Hexacylloepus* Hinton, and the distribution of the

plastron on the hypomera (Fig. 1, B), prosternum, and elsewhere is the same or very similar in the 2 genera. *Holcelmis* may be distinguished by the strongly dilated sides of the pronotum (Fig. 1, A) and the texture of the pronotum and elytra, which is rather "leathery" instead of hard and rigid. *Holcelmis* lacks sublateral carinae on the prosternum and on the disk of the first abdominal sternite, whereas prosternal and abdominal sublateral carinae are nearly always distinct in *Hexacylloepus*.



Fig. 1: Scanning electron micrographs of *Holcelmis woodruffi*, sp. n. (A) dorsal view of right side of pronotum; (B) anterior part of hypomeron and side of prosternum; (C) base of elytra and pronotum; (D) ventral surface; (E) plastron of third abdominal sternite; (F) coxite and movable stylus of female genitalia.

The 2 species of *Holcelmis* may be distinguished as follows:

1. Pronotum across broadest point much broader than long (0.60 mm: 0.48 mm). Pronotum with median longitudinal depression scarcely evident on basal fourth of disk; sides of median depression broadly raised, almost subcarinate at basal third; sublateral depression as distinct and deep as median depression; disk with a shallow but distinct transverse depression on middle *Holcelmis woodruffi*, sp. n.
- 1'. Pronotum across broadest point only a little broader than long (0.55 mm: 0.50 mm). Pronotum with median longitudinal depression shallow but distinct almost to base; sides of median depression not distinctly and broadly raised; sublateral depression much less distinct than median depression; disk without a distinct transverse depression across middle *Holcelmis mamore*, sp. n.

Holcelmis woodruffi Hinton, NEW SPECIES

(Fig. 1-5)

Male. Length, 1.7-1.8 mm; breadth, 0.7 mm. Cuticle moderately pale reddish brown; head darker, eyes black; antennae and tarsi paler and more yellowish. *Pronotum* across broadest point, which is at about basal two-fifths, broader than long (0.60 mm: 0.48 mm) and base broader than apex (0.50 mm: 0.45 mm). Side arcuate, almost straight before basal angle; near lateral margin bent upwards. Sublateral carina broad, prominent, with inner edge sharp, and extending to about apical fourth; carinae distinctly converging beyond middle. Median longitudinal depression broad and deep on middle half of disk but absent or very indistinct on apical and basal fourth; at basal third with sides broadly raised, almost subcarinate. Disk with a shallow but distinct transverse depression at middle. Sublateral depression about as long and deep as discal depression. Surface of disk with round granules about as coarse as facets of eyes; surface between granules with a reticulate microsculpture; granules on elevated parts of disk usually separated by 1 to 2 diameters but sparser or absent on bottom of median and sublateral depressions. *Hypomera* with plastron absent on posterior third; belt on anterior part (Fig. 1, B) extending on a broad front to lateral (dorsal) margin and forwards to apex; anterior plastron-free belt distinctly narrower than front femur. *Elytra* slightly more than twice as long as pronotum (1.18 mm: 0.48 mm). Fourth discal interval subcarinate on basal region. Surface of discal intervals with granules as large but not as elevated as those of pronotum and usually separated by 2 to 3 diameters; surface between granules more or less smooth, without a distinct reticulate microsculpture like pronotum. Discal striae punctures deep, round to subquadrate, not as broad as intervals, and separated longitudinally by 1 to 2 diameters. Epipleura with plastron absent beyond a point about opposite middle of second abdominal sternite. Scutellum obovate, flat, and with surface granulate like adjacent parts of elytra. *Prosternum* with a moderately narrow belt of plastron extending to sides of disk. *Metasternum* with disk nearly flat. Median longitudinal line narrow, shallow, and nearly complete. Surface of disk with flat-topped granules slightly coarser than facets of eyes and usually separated by 1 to 2 diameters; surface between granules with a conspicuous reticulate microsculpture. *Abdomen* with disk of first sternite not distinctly depressed. Plastron present everywhere except on disk of first sternite. *Legs* with plastron on trochanters and plastron complete on femora and tibiae.

Female. Externally similar to male.

Holotype male: BOLIVIA: Dept. Santa Cruz, Prov. Sara, Santa Rosa, at light, 21-II-1969, A. Martinez & R. E. Woodruff.

Paratypes. 45, with same data as holotype.

I take pleasure in naming this species after Dr. R. E. Woodruff.

Holcelmis mamore Hinton, NEW SPECIES

Female. Length, 1.8 mm; breadth, 0.7 mm. Externally similar to *H. woodruffi* but (1) with pronotum distinctly narrower: across broadest point, which is at about basal two-fifths, only a little broader than long (0.55 mm: 0.50 mm) and base broader than apex (0.45 mm: 0.40 mm); (2) median longitudinal depression of pronotum distinct almost to base; (3) sides of median depression not broadly raised and almost subcarinate; (4) sublateral depression of pronotum less distinct than median depression; and (5) disk without a distinct transverse depression across middle instead of with a very distinct transverse depression.

Male. Unknown.

Holotype female: BOLIVIA: Rio Mamoré, near Guyara-Mirim, at light, 20-VIII-1937, H. E. Hinton.

In addition to the differences listed above, *H. mamore* also differs from *H. woodruffi* in having the suberect setae of the elytra slightly shorter and finer. However, this difference between the 2 species is not great enough to appreciate without direct comparison.

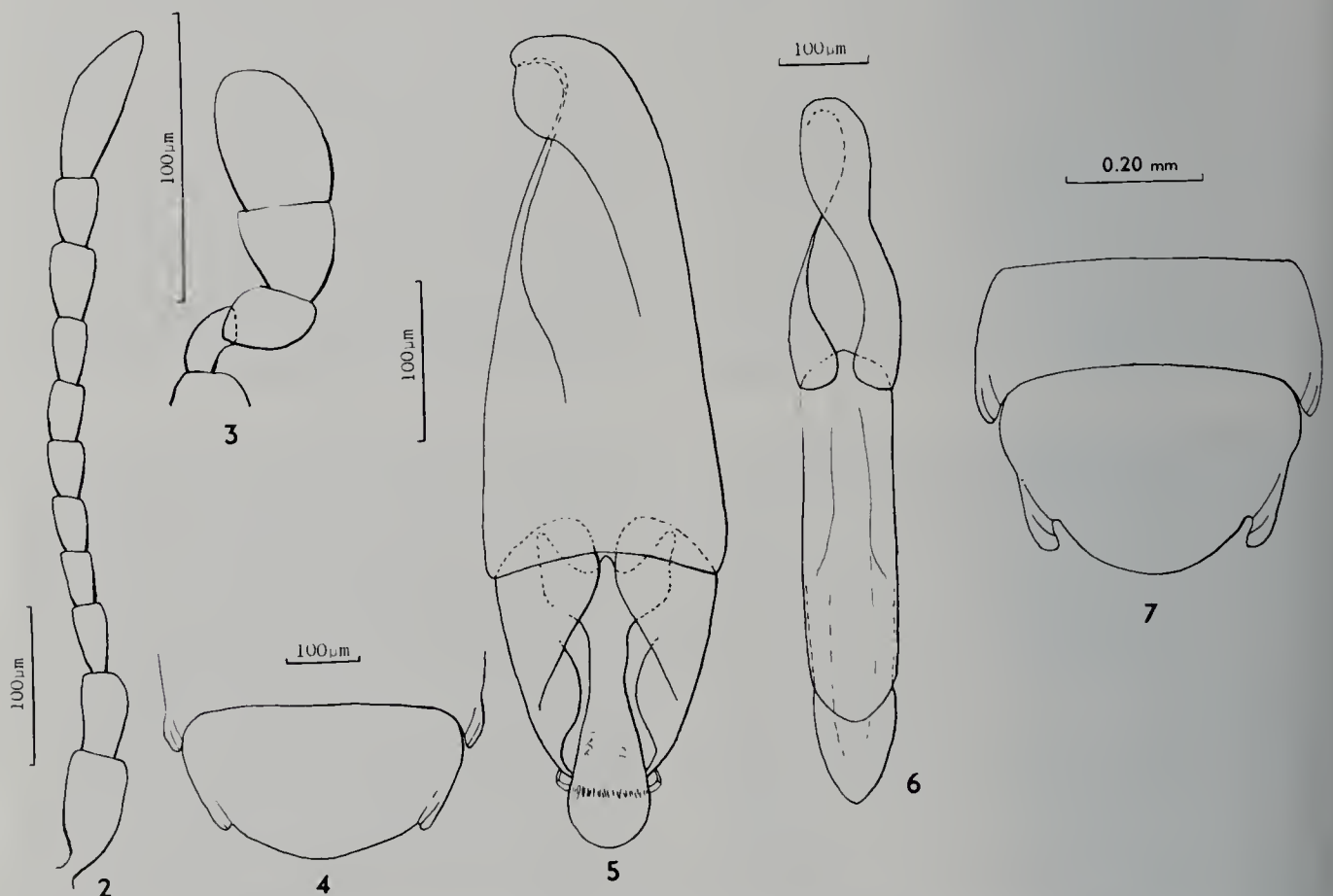


Fig. 2-5: *Holcelmis woodruffi*, sp. n.: (2) antenna; (3) maxillary palpus; (4) ventral view of fifth externally visible abdominal sternite; (5) dorsal view of male genitalia.

Fig. 6-7: *Epodelmis rosa*, sp. n.: (6) dorsal view of male genitalia; (7) ventral view of fourth and fifth externally visible abdominal sternites.

Epodelmis Hinton, NEW GENUS

Body subparallel. Antennae 11-segmented. Maxillary palpi 4-segmented. Pronotum with a well-developed sublateral carina on each side on basal three-fifths; disk with a shallow, median longitudinal depression that is only distinct on about middle fourth; with a shallow but distinct sublateral depression on each side adjacent to inner edge of sublateral carina on about basal two-fifths; lateral margin when seen from side not double; sides, especially near apical angles distinctly dilated and flexed upwards. Elytron with 2 well-developed, granulate, sublateral carinae, 1 on 6th interval and 1 on 8th interval; apices of elytra moderately strongly produced and conjointly more or less truncate. Prosternum long in front of front coxae; process short and distinctly narrower than a front coxa; prosternum without sublateral carinae. Abdomen without sublateral carinae on disk of first sternite. Legs with a single cleaning fringe on front and hind tibiae and 2 cleaning fringes on middle tibiae; claws short, slender, not toothed. Plastron present on the following areas: head below and behind eyes; hypomera as in *Hexacylloepus* and *Holcelmis* except that a broad belt extends adjacent to lateral (dorsal) margin to posterior margin; epipleura; sides of pro-, meso-, and metasternum; all of abdomen except disk of first sternite; and trochanters, femora, and tibiae.

GENOTYPE: *Epodelmis rosa* Hinton, new species.

COMPARATIVE NOTES: *Epodelmis* bears a close superficial resemblance to *Holcelmis* but may be distinguished by (1) the produced apices of the elytra; (2) the extension of the plastron on a broad front to the posterior margin of the hypomera; and (3) the very different structure of the male genitalia (cf. Fig. 5 & 6). *Epodelmis* resembles some of the species of *Hexacylloepus*, but in the latter genus a plastron is always absent on the posterior third of the hypomera, and, although the male genitalia vary greatly in structure, they never approach that of *Epodelmis*.

Epodelmis rosa Hinton, NEW SPECIES

(Fig. 6-7)

Male. Length, 2.2 mm; breadth, 0.8 mm. Cuticle moderately pale reddish brown with head darker, eyes black, and antennae and tarsi more yellowish than body. *Pronotum* across broadest point, which is at about basal two-fifths, broader than long (0.66 mm: 0.55 mm) and base broader than apex (0.65 mm: 0.45 mm). Side arcuate; apical half scarcely noticeably, arcuately emarginate; before basal angle very broadly and shallowly but distinctly emarginate. Sublateral carina with inner edge sharp only on basal two-fifths. Surface of disk with granules about as coarse as facets of eyes or very slightly coarser and usually separated by 1 to 2 diameters; a short but very distinct (at 75 \times), subrecumbent, yellow seta arises from each granule; surface between granules microscopically punctate when not microscopically reticulate. *Hypomera* with plastron extending along entire lateral (dorsal) margin from apex to base. Plastron belt extending backwards to posterior margin about as wide as front tibia. Anterior plastron-free belt about as wide as widest part of front tibia. *Elytra* nearly 3 times as long as pronotum (1.55 mm: 0.55 mm). Fourth discal interval feebly subcarinate for a short distance on basal region. Discal striae

punctures deep, round to subquadrate, about as broad as intervals, and usually separated longitudinally by their diameters or a little less. Surface of discal intervals sparsely, often indistinctly granulate; surface between granules usually more or less smooth; intervals with short but distinct, suberect, yellowish setae. Epipleura with plastron present everywhere from base to apex. Scutellum large, obovate, and surface more or less smooth. *Prosternum* with plastron extending to disk on a very broad front. *Metasternum* with disk nearly flat. Median longitudinal line present on about posterior three-fifths and not as broad as a tarsal segment. Surface of disk with granules like those of disk of pronotum. *Abdomen* with disk of first sternite not depressed; with a large, low, median tubercle on about anterior third; surface of tubercle with dense, golden hairs. Plastron absent only on anterior third to two-fifths of disk of first sternite. *Legs* with a row of fine teeth on inner side of middle and hind tibiae.

Female. Externally similar to male but without a row of fine teeth on inner side of middle and hind tibiae. In the single female seen the median longitudinal depression of the pronotum is longer and more distinct than in the male, and at about basal third on either side of the median depression there is a small but very prominent tubercle. The surface behind the 2 median tubercles has a wide patch of dense, short, erect setae (perhaps pheromone distributing setae).

Holotype male: BOLIVIA: Dept. Santa Cruz, Prov. Sara, Santa Rosa, at light, 21-II-1969, A. Martinez & R. E. Woodruff.

Paratypes. 1 male, 1 female, with same data as holotype.



NOTES ON THE MATING PERIODS OF SOME TIGER BEETLES (COLEOPTERA: CICINDELIDAE)

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Tiger beetles of Quebec mate in the spring and summer. The following list of dates is for copulation of *Cicindela* observed in this province. Mating has been observed in the daytime only.

Cicindela ancocisconensis Harris: Nicolet Co., Bécancour, 5-VI-1971 (2 pair).

Cicindela duodecimguttata Dejean: Saguenay Co., Forestville, 15-VI-1971 (1 pair), and Rivière-Saint-Jean, 22-VI-1971 (1 pair).

Cicindela hirticollis Say: Saguenay Co., Magpie, 23-VI-1971 (1 pair).

Cicindela repanda Dejean: Nicolet Co., Bécancour, 5-VI-1971 (1 pair); Saguenay Co., Tadoussac, 14-VI-1971 (2 pair); Vaudreuil Co., Choisy, 1-VI-1971 (3 pair).

Cicindela scutellaris lecontei Haldeman: Ile-de-Montréal, Montréal, 27-V-1971 (1 pair), E. J. Kiteley.

Cicindela sexguttata Fabricius: Portneuf Co., Saint-Augustin-de-Québec, 18-V-1971 (2 pair), C. Chantal.

